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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/696,409

10/28/2003

Zvi Regev

4528

7590

01/13/2006

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EXAMINER

YOUNG, BRIAN K

ART UNIT      PAPER NUMBER

2819

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/696,409

Applicant(s)

REGEV, ZVI

Examiner

Brian Young

Art Unit

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 is/are allowed.
- 6) ☒ Claim(s) 25-27 is/are rejected.
- 7) ☒ Claim(s) 7-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/28/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 2819

1. **Claims 7-24** are objected to because of the following informalities: 7,12,17 and 21 do not end with a period. Claim 5 recites "the output of the flip-flops or sampling devices" which has no antecedent basis in the claims. Appropriate correction is required.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 25-27** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 25-27 recite "an apparatus to determine the instantaneous phase of a complex signal" with no circuit elements recited. The elements, which comprise the apparatus, must be recited. There is no way to determine how the apparatus performs the operation.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2819

5. **Claim 25** is rejected under 35 U.S.C. 102(b) as being anticipated by Birgenbeier et al.

Birgenbeier et al. disclose (fig.1) an apparatus to determine the instantaneous phase (14) of a complex signal (see I and Q) utilized in an instantaneous frequency (frequency error) measurement apparatus.

Birgenbeier et al. recites (col. 2, ln.14-18):

“Differentiation of the phase trajectory provides the **instantaneous frequency** of the signal from which the carrier frequency may be subtracted to provide the frequency deviation of the signal.”

Birgenbeier et al. also recites (col. 2, ln.39-42):

“A linear regression analysis performed on the phase difference versus time measurement provides an estimate of the frequency error as well as the **instantaneous phase** error.”

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claim 26** is rejected under 35 U.S.C. 103(a) as being unpatentable over Birgenbeier et al.

As noted above, Birgenbeier et al. disclose (fig.1) an apparatus to determine the instantaneous phase (14) of a complex signal (see I and Q).

Art Unit: 2819

It is noted that Birgenbeier et al. do not specifically disclose the apparatus utilized with “digital RF memories”.

However, Birgenbeier et al. do disclose that the circuitry may be used with a digitized RF signal (fig.1, RF Signal input and Digitizer, 1).

Therefore, it would have obvious to one of ordinary skill in the art, to utilize the instantaneous phase determining circuit of Birgenbeier et al. in a digital RF memory circuit, because, obviously RF signals are used in RF memory circuits and Birgenbeier et al. teaches a method for calculating the phase/ frequency of a digitized RF signal, which is useful when modulating/ error correction of RF signals such as for use in a digital memory circuit for accuracy and control of the memory signals.

8. **Claim 27** is rejected under 35 U.S.C. 103(a) as being unpatentable over Birgenbeier et al.

As noted above Birgenbeier et al. disclose (fig.1) an apparatus to determine the instantaneous phase (14) of a complex signal (see I and Q).

It is noted that Birgenbeier et al. do not specifically recite that the apparatus may be used in a “signal restoration” circuit.

Art Unit: 2819

However, Birgenbeier et al. do disclose that the circuitry may be used to determine an "ideal" modulated signal. Analysis is performed using mathematical and linear regression to determine the ideal signal.

Birgenbeier et al. also recites (col. 2, ln.32-42):

Utilizing the data clock phase, the detected data sequence and the time interval of interest, **a digital signal synthesizer mathematically generates the ideal phase** trajectory corresponding in the transmitted signal. The ideal phase trajectory thus generated is subtracted from the previously measured phase trajectory of the transmitted signal to provide a signal phase difference versus time measurement. **A linear regression analysis performed on the phase difference versus time measurement provides an estimate of the frequency error as well as the instantaneous phase error.**

Therefore, it would have been obvious to one having ordinary skill in the art, to utilize the phase measuring apparatus of Birgenbeier et al. for signal restoration, because mathematical/ linear regression, combined with signal analysis, is a well know manner for computing/ restoring signals and accurate measurement of the phase is necessary to completely correct/ restore the signals.

9. **Claims 1-6** are allowed.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Art Unit: 2819

Yamaguchi, et al disclose a clock signal that has been converted into a digital signal and transformed into a complex analytic signal, and an instantaneous phase is estimated.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Young whose telephone number is 571-272-1816. The examiner can normally be reached on Mon-Fri 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Brian Young  
Primary Examiner  
Art Unit 2819

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